

Analysis of the Main Factors Affecting the Development Strategy of 3v3 Basketball in Universities in Leshan City

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Abstract: Targeting at three regular universities in Leshan City, Sichuan Province, analysis was conducted on the factors affecting the development of 3v3 basketball through methods as literature analysis, questionnaires and mathematical statistics. The results showed that factors affecting the development of 3v3 basketball varies from mutiple aspects, including the direct factors as lack of facilities and equipment and teaching ability insufficiency, enviromental factors as the lack of publicity and support from the schools, and the low awareness and participation of college students in 3v3 basketball. After the analysis, the development strategy of 3v3 basketball in Leshan universities was proposed, so as to improve the level of 3v3 basketball in Leshan City, Sichuan Province and promote the development of basketball in China.

Keywords: Leshan Universities; 3v3 Basketball; Survey of Current Situation; Development Strategy

1. Introduction

1.1. Purpose of the Study

In China, 3v3 basketball is a popular sport among college students, which has certain entertainment, fitness and education value. The development of 3v3 basketball in universities can not only make physical education classes more interesting and cultivate students' good habits of long-term participation in basketball, but also promote the development of college basketball and enrich campus sports culture.

Basketball is a confrontational sport in competitive sports, which has a great impact on improving athletic ability and promoting physical health. It explores the potential and competitiveness of athletes to a great extent, which is beneficial to athletes. In modern society, it also plays a great role in interpersonal communication and recreation and promoting social development.

(Chen & Zhang, 2017) used the documentary, questionnaire, and expert interview method to study the current basketball teaching achievement evaluation system, the weaknesses of the system of analysis, and put forward the basketball teaching evaluation system should address the students' and teachers' attitude towards basketball general course, improve teachers' teaching, and students' passion for target, so as to improve the students' basketball quality, body quality, and healthy development.

(C. Liu, 2019) investigated the problems that exist in basketball teaching in Chinese colleges and universities using literature, expert interviews, and logical induction methods, and investigated ways and means to improve the quality of basketball teaching in colleges and universities.

Suggestions and countermeasures are made: Deepening basketball education reform; training student basketball referees; developing a campus basketball culture; increasing school publicity financial support is important to schools. The five strategies listed above are summarized in the hope of providing some resources for university leaders to use in developing relevant policies and promoting three-man basketball.(J. J. A. J. o. H. Liu & Sciences, 2019).

(Geng & Research, 2020) used students from colleges and universities in Heilongjiang Province as research subjects, investigating and studying the three-player basketball game using literature reviews, interviews, and questionnaires. The findings indicate that three-player basketball can promote student

unity and cooperation in colleges and universities, as well as cultivate students' comprehensive practical ability in sports and the spirit of innovation. The development of three-player basketball in colleges and universities is critical [1].

The goal of this essay (Y. Liu, 2020) is to investigate the impact of big data analysis on college basketball sports teaching and to develop a model for improvement (BDA).

This study examines the teaching effects and improvement models of basketball sports in China's CAU in the context of the era by carefully combining the characteristics, concepts, and development trends of big data. According to the findings, 60.8 percent of CAU in China presently employ big data technology in basketball sports, which can help to create college basketball games, boost athletes' level of competitiveness, and increase basketball fans' enjoyment and interest.

The study (Wen, 2020) demonstrates that there are numerous influence elements for basketball teaching reform in colleges and universities, including a shortage of sports resources in colleges and universities, as well as college and university teachers' teaching skills that are not up to par. The evolution of collegiate basketball teaching reform is apparent, and it serves as a model for individual basketball teaching reform [2].

The twenty-first century is characterized by rapid advancements in information technology. The use of network technology in college public sports basketball teaching enriches the teaching form of college physical education, accelerates the information development of college public sports basketball teaching, and adapts the content and teaching form of basketball teaching to the evolving information society. (Hai, 2021) .

In China, (Fan, 2018)'s research shows that: three-person basketball is developing especially rapidly and is loved by the majority of students, because of its own simplicity and fun in colleges and universities, it is convenient to carry out the organization, which can attract a larger crowd of students; the lack of complete basketball courts and facilities available in schools leads to them always facing various problems when participating in three-person basketball, such as insufficient venues, broken court floors, and serious damage to baskets, which not only affects the students' mood to participate in sports, but also brings great safety risks to the development of three-person basketball. The relevant departments of the universities and education bureaus should pay attention to the sports activities in schools, based on the existing capacity of the universities and colleges, they should reasonably carry out the sports events, reasonably develop the sports facilities, cultivate the sports interests of college students, and vigorously develop various sports activities; the Kunming Basketball Association and the Kunming Culture and Sports Bureau should organize the training of basketball teachers, basketball referees and basketball coaches in colleges and universities at different levels, so as to improve the theoretical and practical abilities of teachers, coaches and referees for the development of three-person basketball in colleges and universities. (Xiwen, 2019) investigated the knowledge of three-person basketball, the teaching and training of three-person basketball, the organization and development of competition, etc. Through the SWOT analysis matrix, we proposed SO sustainable development countermeasures, WO reversal development countermeasures, ST multi-factor integration development countermeasures and WT defensive development countermeasures for the development of three-person basketball in Henan universities. (Zicheng, 2019) analyzed the feasibility, current situation, trend and social value of developing three-person basketball in Jiangxi colleges and universities, and the countermeasures for developing three-person basketball in Jiangxi colleges and universities. The study concluded that the basketball court infrastructure in Jiangxi universities can meet the basic needs of three-person basketball [3]. It is suggested that Jiangxi colleges and universities should carry out three-person basketball courses and promote three-person basketball to further increase the popularity of three-person basketball and the enthusiasm of students to participate in three-person basketball, so as to better promote the physical development of college students and the formation of lifelong sports concept and realize the fitness value of three-person basketball in colleges and universities. Adhere to the people-oriented approach to shape the equality consciousness of college students. (Yumo, 2020)

1.2. Scope of the Study

In this paper, we studied about 54,000 students from freshman to senior year in College of Engineering and Technology from Chengdu University of Technology, Leshan Normal University and Leshan Vocational and Technical College.

2. Research Process and Methodology

2.1. Research Process

The process of this study begins with determining the research topic and purpose. After that, a literature review was conducted to determine the framework and hypotheses and form the framework and questionnaire content of the study. Next, a pre-test questionnaire was distributed, and the insignificant items were modified and deleted before the formal questionnaire was distributed. The questionnaires were collected and analyzed. Conclusions and advice were composed on that basis.

2.2. Research Methodology

Literature method, interview method, questionnaire method, mathematical and statistical method, and logical analysis method [4].

3. Data Analysis

3.1. Questionnaire Survey of Infrastructure Statistics

Table 1: Questionnaire Survey of Infrastructure Statistics Data

		Frequency	Percentage	Effective percentage	Cumulative percentage
Gender	Male	94	43.1	43.1	43.1
	Female	124	56.9	56.9	100
Movement frequency	1 time or less	62	28.4	28.4	28.4
	2- 3 times	65	29.8	29.8	58.3
	4 - 5 times	67	30.7	30.7	89
	6 times and above	24	11	11	100
Grade	Freshman year	50	22.9	22.9	22.9
	Sophomore year	68	31.2	31.2	54.1
	Junior year	87	39.9	39.9	94
	Senior year	13	6	6	100
Ethnicity	Ethnic Minorities	28	12.8	12.8	12.8
	Ethnic Han	190	87.2	87.2	100
Whether to participate in sports groups	Participate	203	93.1	93.1	93.1
	None	15	6.9	6.9	100

3.1.1. Frequency of Exercise Per Week

From the table 1 above, we can find that among the 218 samples, 62 people (28.4% of the total) exercised once a week or less, 65 people (29% of the total) exercised 2-3 times a week, 67 people (30.7% of the total) exercised 4-5 times a week, and 24 people (11% of the total) exercised 6 times a week or more.

3.1.2. Whether to Participate in Sports Groups

From the table 1 above, we can find that among 218 samples, 203 people (93.1% of the total) are participating in sports groups, and 15 people (6.9% of the total) are not participating in sports groups.

3.1.3. Grades

From the table 1 above, we can find that among the 218 samples, 50 people (22.9% of the total) were freshmen, 68 people (31.2% of the total) were sophomores, 87 people (39.9% of the total) were juniors, and 13 people (6% of the total) were seniors. The participants were distributed among different grades almost equally except for the senior grade with a comparatively small number [5].

3.1.4. Gender

From the table 1 above, we can find 94 male participants out of 218 samples, accounting for 43.1% of the total, and 124 female participants, accounting for 56.9% of the total. Females were slightly more than males.

3.1.5. Ethnicity

From the table 1 above, we can find that there are 28 ethnic minorities in 218 samples, accounting for 12.8% of the total, and 190 Han students, accounting for 87.2% of the total.

3.2. Descriptive Analysis of the Main Problems

Table 2: The analysis of total direct condition value score

	N	Minimum value	Maximum value	Average value	Standard Deviation
Total Equipment Score	218	5	20	13.0963	4.14983
Total Teaching Score	218	5	19	12.5321	4.19033
Total direct condition score	218	10	37	25.6284	8.21174
Total publicity score	218	4	19	12.9725	4.24146
Total Support Score	218	4	19	12.2706	4.5503
Total score of environmental conditions	218	9	38	25.2431	8.72417
Total score of participation awareness	218	7	27	18.8119	6.10405
Participation	218	8	32	21.8532	7.40323

3.2.1. Total Direct Condition Score

The questionnaire was divided into two dimensions for the direct conditions, which were related facilities score and total teaching skills score [6].

4 questions were listed to score the dimension of related facilities. The mean score of the 218 participants for the perceived facilities was 13.09, with a standard deviation of 4.14, a minimum score of 5, and a maximum score of 20. The mean score of perceived teaching ability of the 218 participants was 12.53, with a standard deviation of 4.19, a minimum score of 5, and a maximum score of 19. In the dimension of direct condition score with 8 questions, the mean score of 218 participants in teaching conditions was 25.6, with a standard deviation of 8.2, a minimum score of 10 and a maximum score of 37.

3.2.2. Total Score of Environmental Conditions

The questionnaire was divided into two dimensions: publicity and support scores.

The dimension of publicity included 4 questions. The mean score of 218 participants on perceived publicity is 12.97, with a standard deviation of 4.2, a minimum score of 4 and a maximum score of 19. The dimension of school support included a total of 4 questions, and the mean score of 218 participants is 12.2, with a standard deviation of 4.55, a minimum score of 4 and a maximum score of 19. The dimension of environmental conditions contained 8 questions, and the mean score of 203 participants on the natural environment is 25.24, with a standard deviation of 8.72, a minimum score of 9 and a maximum score of 38.

3.2.3. Total Participation Awareness Score

In the survey for students' participation awareness, the questionnaire had only one dimension. It focused on investigating students' awareness of participation in 3v3 basketball. In the dimension of participation, which includes 6 questions, the mean score of 218 participants is 18.81, with a standard deviation of 6.1, a minimum score of 7 and a maximum score of 27.

3.2.4. Total Engagement Score

On the survey for student participation, the questionnaire had only one dimension. It focused on investigating the participation in 3v3 basketball. The dimensions on participation included seven questions, and the mean score of 218 participants is 21.85 with a standard deviation of 7.4, a minimum score of 8 and a maximum score of 32.

4. Research Results and Recommendations

4.1. Research Analysis

Based on further relations we construct the structural equation model is shown in Figure 1 as follows:

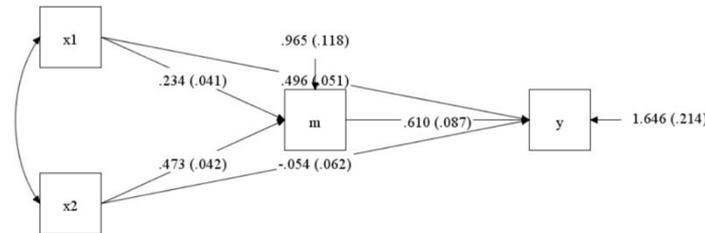


Figure 1: The structural equation model

Note: The figure lists x1 as the total score of direct conditions x2 as the total score of environmental conditions m as the awareness of participation y as the degree of participation [7].

Table 3: Path coefficient analysis data

	Estimate	S.E.	Est./S.E.	P-Value
Awareness of participation → Participation	0.610	0.087	7.017	0
Direct conditions → Awareness of participation	0.234	0.041	5.763	0
Environmental conditions → Awareness of participation	0.473	0.042	11.298	0
Direct condition → Participation	0.496	0.051	9.789	0
Environmental conditions → Participation	-0.054	0.062	-0.865	0.387

The relationships between the variables are above [8]. Both direct conditions and participation awareness have a significant positive predictive effect on participation ($p < 0.05$), while environmental conditions are negative and below the significance level ($p > 0.05$). Both direct conditions and environmental conditions have a positive significant predictive effect on students' participation awareness in 3v3 basketball [9].

Table 4: Mediation effect test data

	Effect	S.E.	Est./S.E.	P-Value
Total effect of direct condition	0.638	0.052	12.370	0
Mediation effect of direct condition	0.143	0.039	3.646	0
Direct effect of direct condition	0.496	0.051	9.789	0
Total effect of environmental conditions	0.235	0.053	4.475	0
Mediation effect of environmental condition	0.289	0.035	8.261	0
Direct effect of environmental condition	-0.054	0.062	-0.865	0.387

The model was validated by software. In the validation, the model was estimated at 95% confidence interval with a sample size of 5000 for the test of mediating effects. In the analysis of the total effect of the total direct condition score on participation, an effect size of 0.638($p < 0.001$) was obtained and 0 was not contained at the 95% confidence interval. In the analysis of the indirect effect of the direct condition and the participation awareness score on the total participation score, the indirect effect of the direct condition on total participation score was 0.143($p < 0.001$), and 0 was not contained at the 95% confidence interval [10]. This indicates that the mediating effect of direct conditional score on participation score was significant. In the analysis of the direct effect of direct condition and participation awareness scores on total participation score, the direct effect of direct condition on total participation scores was 0.496($p > 0.05$) with 0 contained at 95% confidence interval. This indicates that the direct effect of total direct condition scores on total participation scores was not significant.

4.2. Study Results

4.2.1. The Results

The results of the questionnaires and statistical analysis were analyzed by demographic analysis, validating factor analysis, and structural model analysis. The findings can be summarized as below:

The descriptive analysis shows that among 218 participants, 62 exercised once a week or less (28.4% of the total), 65 exercised two to three times a week (29.1% of the total), 67 exercised four to five times a week (30.7% of the total), and 24 exercised six times a week or more (11% of the total). It can be found out that the number of participants who exercise more than 4 times a week is less than a half of the total number, indicating the non-ideal status of the overall university students in terms of sports habits [11].

4.2.2. The Verification

In the verification of the results of the structural equation model, we also found many remarkable phenomena:

4.2.2.1 The Awareness of Participation

All of the awareness of participation had a significant positive predictive effect on participation ($p < 0.05$)

First of all, the significant positive predictive effect of participation awareness on participation is in line with the general perception. Basketball, as a sport that is easy to play and has a wide range of popularity, has a more translatable effect on participation than other types of sports [12].

4.2.3. Students' Awareness of Participation

Students' awareness of participation plays a partial mediating role in the influence of environmental conditions on participation, and a complete mediating role in the influence of direct conditions on participation.

The results of the structural equation model showed that the direct and environmental conditions did not have identical paths to influence participation.

4.2.4. Teaching Ability Factors

In contrast to the environmental conditions, the direct conditions of facilities and equipment, teaching ability factors have been closely linked to course instruction [13].

4.2.5. Effect Sizes of Direct and Environmental Conditions

In addition, the effect size of the direct condition in the intermediary model is remarkable. The results of the structural equation model shows that the total effect size of the direct condition is 0.638, of which the effect size of the intermediary path is 0.143, accounting for less than a quarter. This indicates that the effects of direct conditions are mainly presented through the direct path.

4.2.6. Further Measures

Accordingly, we can also propose further measures for the development of 3v3 basketball.

(1) The concept of the teachers' team must be changed. Initiatives should be taken to adapt to the new form of physical education curriculum [14].

(2) To increase the construction of 3v3 basketball infrastructure, improve the teaching conditions, create a good teaching order and environment, and stimulate the interest of students, investment in hardware facilities should be increased continuously to gradually form a stable development path of students' awareness of participation to participation.

4.3. Development Strategy

This paper analyzes the current factors mentioned above and proposes the following strategies for the development of 3v3 basketball among the universities in Leshan City.

(1) The sports departments should pay attention to the development of 3v3 basketball, and further improve the coordination and scientific management work. University leaders should give key support to ensure better development of the program in terms of venues and equipment.

(2) Universities in Leshan should make full use of the medias as school publicity boards and broadcasting to actively report the knowledge and competition of 3v3 basketball, increase the publicity and expand the influence.

(3) Regular teaching and training of 3v3 basketball should be carried out and institutionalized in the universities in Leshan. Teaching courses should be carried out on purpose and systematically. A good team of teachers should be established so as to improve the teaching ability and attract the active participation of basketball fans [15].

(4) Cooperation between schools and enterprises should be strengthened to attract funds from outside school and form long-term partners. Basketball field facilities should be improved, and financial support be provided for the flourishing of 3v3 basketball to open up new paths for the development of the basketball market and enhance the operation of clubs in our province [16].

5. Conclusions

From the surveyed literature, most studies (Fan, 2018; Jiayue, 2019; Peng, 2020; Xiwen, 2019; Yumo, 2020; Yunpolitics, Jun, & Zhiqing, 2020; Zhibang, 2019; Zhihao, 2019; Zicheng, 2019) have mainly tapped into the factors that influence the development of three-person basketball in colleges and universities, such as facilities and equipment, teaching ability, publicity and school leadership support, but ignored an important factor for the development of three-person basketball in colleges and universities - the participation in students. This paper proposes that an important factor affecting the development of three-person basketball in colleges and universities in Leshan is to enhance student participation. By analyzing the relationship between these conditional factors and student participation awareness and involvement, strategies and suggestions for the development of three-person basketball in Leshan City are proposed. It is worth not that facilities and equipment and teaching ability can directly enhance students' participation, however, publicity and school support cannot directly enhance students' participation but need to enhance students' participation through the intervention of students' participation awareness.

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